A 'Good' Question

A 'good' question possesses three features:

- It requires more than recall of a fact or reproduction of a skill.
- It has an educative component; that is, the pupil will learn from attempting it, and the teacher will learn about the pupil from the attempt.
- It is, to some extent, open; that is, there may be several acceptable answers.

A rectangle has a perimeter of 20 cm. What is its area? **or**
The average of three numbers is 11.2. If one of the numbers is 7.6, find the other two.

What is an open-approach to mathematics teaching?

Traditional Problems:

- One and only one answer which is predetermined.
- Problems are so well-formulated that answers are either correct or incorrect.
- The correct answer is unique.

These problems are called 'closed' problems. (Becker and Shimada)

Open-ended Problems:

When students are asked to…

- find several or many correct answers to a problem.
- find several or many different correct approaches or ways to get an answer.
- formulate or pose problems of their own like one they have just solved.

…and not finding the answer or the method of getting an answer, students are dealing with an "open-ended" problem. The "openness" is lost if the teacher proceeds as though there is only one answer or one method presupposed as the correct one. (Becker and Shimada)

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TRADITIONAL	VS.	OPEN-ENDED
Solve: $x + 5 = 12$		Write an equation whose solution is 7.
Find the mean of: 45, 36, 52, 38, 44		Find a set of 5 numbers, none of which are equal, whose mean is 43.
Round 8.83 to the nearest tenth.		Which numbers might be rounded to 8.8?
Find the area and perimeter.  6 12		Find the area of a rectangle which has a perimeter of 36.

OPEN-ENDED QUESTIONS

{Writing Prompts}

- Explain how you arrived at your answer.
- What strategy would you use to …
- What pattern do you notice …
- Explain the process to a younger child …
- What do you predict will happen if …
- What are other possible answers …
- What are other strategies for solving …
- Write a general rule for …
- Give an example of a real-life situation where this could be used …